

④ 30820 ③

(12) AUSTRALIAN PATENT ABSTRACT
(19) AU

(11) AU-A-64249/86

(54) TRANSFERABLE FLOCKED FIBRE STICKER

(71) TOKYO HOULAISHA CO., LTD.

(21) 64249/86 (22) 21.10.86

(24) 9.10.80

(31) 55-141761 (32) 9.10.80 (33) JP

(43) 15.1.87

(51)⁴ B44C 1/10 B44F 5/00 B32B 5/08 B32B 7/06
B32B 7/12 B32B 33/00 B44C 1/16

(72) SHIGEHIKO HIGASHIGUCHI

(74) SF

(57) Claim

1. A transferable flocked fiber sticker comprising a fiber flocked base assembly including a base sheet, a release adhesive layer applied to one surface of said base sheet and a number of fibers releasably flocked at one end in a closely adjacent and erect relationship to the adhesive applied surface of said base sheet by electrostatic blowing, and a transfer adhesive layer applied in a desired design or pattern to the end of said fibers opposite from the end of the fibers flocked to said base sheet and including a thermoplastic synthetic resin adhesive design layer applied to said fibers and a hot melt synthetic resin adhesive layer applied over said design layer heat dried so as to partially fuse the hot melt synthetic resin adhesive layer so as to cause it to partially fuse to the design layer.

9. A method for producing a transferably flocked fiber sticker comprising the steps of providing a base sheet, applying a release adhesive layer to one surface of said base sheet, said release adhesive being capable of releasably flocking fibers to said base sheet, releasably flocking a number of fibers at one end in a closely adjacent and erect relationship to the adhesive applied surface of said base sheet by electrostatic blowing to thereby provide a fiber flocked base assembly, applying thermoplastic synthetic resin adhesive in a desired design or pattern to the end of said fibers opposite from the end of the fibers releasably flocked to said base

.../2

(11) AU-A-64249/86

-2-

sheet to provide a design layer, applying powdery hot melt synthetic resin adhesive in the form of a paste in water or other aqueous solution to said design layer, heat drying the resulting product to evaporate the moisture content in said paste form adhesive and at the same time partially fuse the hot melt synthetic resin adhesive so as to cause the hot melt synthetic resin adhesive to adhere said design layer to thereby provide a hot melt synthetic resin layer and cooling the resulting product to firmly unite said design layer and hot melt synthetic resin layer together to provide a transfer adhesive layer.

5,105\$(14)/21

FORM 10

SPRUSON & FERGUSON

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class Int. Class

64249/86

Complete Specification Lodged:

Name of Applicant: TOKYO HOULAISHA CO., LTD.
Address of Applicant: 3-4-2 Honjo, Sumida-Ku, Tokyo, Japan
Actual Inventor: SHIGEHICO HIGASHIGUCHI
Address for Service: Spruson & Ferguson, Patent Attorneys,
Level 33 St Martins Tower, 31 Market
Street, Sydney,
New South Wales, 2000, Australia

Complete Specification for the invention entitled:

...
"TRANSFERABLY FLOCKED FIBER STICKER AND METHOD PRODUCING SAME"

...
The following statement is a full description of this invention,
including the best method of performing it known to us
...
...

SD/69U

This invention relates to a transferably flocked fiber design material and more particularly, to a transferably flocked fiber sticker and a method for producing the sticker.

5 There have been proposed and practically employed a wide variety of transferably flocked fiber stickers and most of the prior art transferably flocked fiber stickers basically comprising (1) a fiber flocked base assembly including a base sheet formed of paper, cloth or the like, a release adhesive layer applied to one surface of the base sheet and capable of
10 releasably flocking fibers to the base sheet and a number of fibers releasably flocked at one end in closely adjacent and erect relationship to the adhesive applied surface of the base sheet by electrostatic blowing or the like, and (2) a thermoplastic synthetic resin adhesive transfer layer applied in a desired pattern or design to the opposite end of selected ones of the flocked fibers and capable of permanently securing the fibers to a
15 permanent support member such as a shirt or the like.

In the transfer of the fibers in the desired design or pattern from the fiber flocked base assembly onto the shirt, the sticker is placed onto the shirt to bring the fiber transfer layer into contact with the shirt laid on a suitable stationary pad or the like and pressing the sticker against
20 the shirt by the use of a heated iron, for example.

The heat-ironing fuses the thermoplastic synthetic resin adhesive forming the fiber transfer layer which in turn adheres to the shirt to thereby secure the end of the fibers opposite from the end thereof releasably flocked to the base sheet to the shirt. When the thermoplastic
25 synthetic resin adhesive cools down, the fibers are firmly held on the shirt.

Next, when the fiber flocked base assembly is to be separated from the shirt, the releasably flocked fibers to which the transfer layer is applied are separated from the base sheet and permanently transferred onto and left
on the shirt with the rest of the fibers to which the transfer layer is not applied remaining on the base sheet.

As a result, the pattern or design defined by the transferred fibers is formed on the shirt in the mirror image with respect to the applied thermoplastic synthetic resin adhesive transfer layer.

35 The transferably flocked fiber stickers of the abovementioned type are disclosed in Japanese Patent Application Publications Nos. 4768/1961 and 35619/1978, Japanese Patent Application No. 86541/1973, Japanese Utility Model Applications No. 90892/1973 and U.S. Patents Nos. 4,142,929 and

4,201,810, for example.

In the prior art transferably flocked fiber stickers disclosed in the abovementioned Japanese patent and utility model applications and U.S. patents, when the fibers releasably flocked to the base sheet are to be colored, the fiber flocked base assembly is imparted thereto coloring ability or the fiber flocked base assembly is so prepared that the releasably flocked fibers can be easily separated from the base sheet when the fibers are desired to be transferred from the fiber flocked base assembly onto a shirt. And as for the formation of the fiber transfer layer of the thermoplastic synthetic resin adhesive at the end of the fibers opposite from the end thereof releasably flocked to the base sheet, the fiber transfer layer is formed by merely applying thermoplastic synthetic resin adhesive to the adjacent end of the releasably flocked fibers or by applying thermoplastic synthetic resin adhesive having powdery hot melt synthetic resin adhesive distributed therein to the adjacent end of the releasably flocked fibers. Alternatively, as traditionally practiced in the padding and lining cloth production, a thermoplastic synthetic resin adhesive layer is first applied to the adjacent end of the releasably flocked fibers and hot melt synthetic resin adhesive is then spread over the adhesive layer to be caused to adhere to the layer.

There is disclosed herein a transferable flocked fiber sticker comprising a fiber flocked base assembly including a base sheet, a release adhesive layer applied to one surface of said base sheet and a number of fibers releasably flocked at one end in a closely adjacent and erect relationship to the adhesive applied surface of said base sheet by electrostatic blowing, and a transfer adhesive layer applied in a desired design or pattern to the end of said fibers opposite from the end of the fibers flocked to said base sheet and including a thermoplastic synthetic resin adhesive design layer applied to said fibers and a hot melt synthetic resin adhesive layer applied over said design layer.

There is further disclosed herein a method for producing a transferably flocked fiber sticker comprising the steps of providing a base sheet, applying a release adhesive layer to one surface of said base sheet, said release adhesive being capable of releasably flocking fibers to said base sheet, releasably flocking a number of fibers at one end in a closely adjacent and erect relationship to the adhesive applied surface of said base sheet by electrostatic blowing to thereby provide a fiber flocked base assembly, applying thermoplastic synthetic resin adhesive in a desired

design or pattern to the end of said fibers opposite from the end of the fibers releasably flocked to said base sheet to provide a design layer, applying powdery hot melt synthetic resin adhesive in the form of a paste in water or other aqueous solution to said design layer, heat drying the resulting product to evaporate the moisture content in said paste form adhesive and at the same time partially fuse the hot melt synthetic resin adhesive so as to cause the hot melt synthetic resin adhesive to adhere said design layer to thereby provide a hot melt synthetic resin layer and cooling the resulting product to firmly unite said design layer and hot melt synthetic resin layer together to provide a transfer adhesive layer.

A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings, wherein:

Fig. 1 is a cross-sectional view of one embodiment of the transferably flocked fiber sticker constructed in accordance with the present invention;

Fig. 2 is an explanative cross-sectional view showing the manner in which the releasably flocked fibers are transferred from the fiber flocked base assembly of the sticker of Fig. 1 onto a permanent support member such as a shirt or the like;

Fig. 3 is a cross-sectional view of the design formed on the shirt by the fibers transferred thereon;

Figs. 5, 7 and 9 are cross-sectional view of prior art transferably flocked fibers stickers showing the disadvantages inherent in the prior art stickers; and

Figs. 6, 8 and 10 are cross-sectional views of designs formed on the shirt by the fibers transferred from the stickers as shown in Figs. 5, 7 and 9, respectively.

A preferred flocked fibre transfer of the invention is produced by coating one surface of a base sheet 1 formed of paper, cloth or the like with a release adhesive layer 2. Fibres 3 are flocked into the release adhesive layer 2 by electrostatic blowing or the like to provide a fibre flocked base assembly 4 in which the fibres are closely adjacent and substantially perpendicular to the release adhesive layer 2. A design layer 5 of a thermoplastic synthetic resin adhesive is applied to the free end of the flocked fibres 3 in any desired design or pattern. The thermoplastic synthetic resin adhesive which forms the design layer 5 may optionally contain a first hot melt synthetic resin in powder form. A paste of a second hot melt synthetic resin adhesive in powder form in a water base is applied to design layer 5 to form a penetrative adhesive layer 6. The

second hot melt synthetic resin adhesive contains an elastomer to impart resiliency. The resulting product is dried at an elevated temperature to evaporate moisture from the paste and to partially fuse the second hot melt synthetic resin thereby causing penetrating adhesive layer 6 to adhere to design layer 5. On cooling, the design layer 5 and penetrating adhesive layer 6 unite to form a composite layer 7 which together with fibre flocked base assembly 4 forms a fibre flock transfer 8 (Figure 1).

Design layer 5 may be applied to the fibre flocked base assembly by silk screen printing or the like.

The paste which forms the penetrating adhesive layer 6 may also be applied by silk screen printing from a screen having a similar design or pattern to that employed for applying the design layer 5.

The melting point of the thermoplastic synthetic resin adhesive of the design layer 5 is higher than the melting point of the first hot melt synthetic resin adhesive but lower than the melting point of the second hot melt synthetic resin adhesive. Suitable thermoplastic synthetic resin adhesives which may be employed in the design layer 5 include acrylic synthetic resins, vinyl acetate synthetic resins and vinyl chloride synthetic resins.

The second hot melt synthetic resin may be nylon or polyester and the elastomer contained therein may be a frother or a latex resin. The paste may also include a thickener, surfactant and/or defoamer.

The design or pattern layer 5 is formed by means of the silk screen printing by the use of a silk screen having a desired design or pattern printed thereon.

The powdery hot melt synthetic resin adhesive in the paste form in water or other liquid chemical is applied to the design or pattern adhesive layer by means of the silk screen printing with the use of a silk screen having a design or pattern similar to that printed on the silk screen used in the formation of the design layer printed thereon.

The thermoplastic synthetic resin adhesive forming the design or pattern layer 5 is one having a fusing point higher than that of the powdery hot melt synthetic resin adhesive to be contained therein, but lower than that of the hot melt synthetic resin adhesive to be applied to the design or pattern layer and such thermoplastic synthetic resin adhesives include acrylic synthetic resins, vinyl acetate synthetic resins and vinyl chloride synthetic resins.

Next, the transfer of the releasably flocked fibers from the fiber

flocked base assembly onto a permanent support member such as shirt will be described referring to Fig. 2. The transferably flocked fiber sticker 8 is placed onto a permanent support member such as a shirt 9 to bring the fiber into contact with the shirt laid on a suitable support pad 9 and the sticker 8 is pressed against the shirt by means of a heated iron (not shown).

The ironing partially fuses the thermoplastic synthetic resin forming the design or pattern layer 5 applied to the end of the releasably flocked fibers 3 opposite from the end thereof flocked to the base sheet 1 and enhances the bridging action of the synthetic resin adhesive of the design layer. Thereafter, the sticker 8 is cooled to solidify so as to firmly hold the adjacent end of the fibers 3 therein.

The ironing also fuses the hot melt synthetic resin adhesive containing the resiliency imparting agent or resiliency assistant therein applied to the design or pattern layer 5 and the fused hot melt adhesive adheres to both the shirt 9 and design layer 5. Upon the cooling of the sticker 8, the design or pattern layer 5 formed of thermoplastic synthetic resin adhesive forms a fiber end holding layer and the hot melt synthetic resin adhesive and resiliency imparting agent or resiliency assistant firmly secure the design or pattern layer 4 to the shirt 9 (see Fig. 2).

When the thermoplastic synthetic resin adhesive forming the design or pattern layer 4 contains the powdery hot melt synthetic resin adhesive, as the transferably flocked fiber sticker 8 is subjected to the heat from the iron the hot melt resin adhesive oozes out of the design layer 5 to firmly secure the fibers 3 to the shirt 9.

Therefore, after the transferably flocked fiber sticker 8 has cooled down, when the fiber flocked base assembly 4 of the sticker 8 is desired to be peeled off the shirt 9, since the fibers 3 are releasably flocked to the base sheet 1 by the release adhesive layer 2, the fibers to which the transfer adhesive layer 7 is applied are separated from the base sheet 1 and firmly held on the shirt 9 and the rest of the fibers to which the thermoplastic synthetic resin adhesive layer 6 is not applied remain on the base sheet 1.

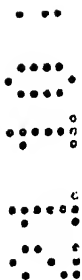
As a result, a design or pattern which does full justice to that of the transfer layer 7 is formed on the shirt 9 (see Fig. 3).

According to the conventional methods for producing transferably flocked fiber stickers, the transferably flocked fiber stickers are produced by the methods for producing paddings and linings as disclosed in Japanese Patent Application Publications Nos. 2042/1963 and 20869/1971. That is, a

thermoplastic synthetic resin adhesive is applied in a design or pattern to the end of selected ones of the fibers 3 opposite

5 According to the preferred form of the present invention, transferably flocked fiber stickers can be efficiently produced by forming a design layer exactly in conformity with the contour of the design or pattern layer formed at the end of the fibers opposite from the end thereof releasably flocked to the base sheet to thereby form a transfer adhesive layer.

10 Furthermore, according to the preferred form of the present invention, since the transfer adhesive layer is formed in a design or pattern, when transferred onto a permanent support member such as a shirt, the fibers can form a design or pattern in exactly conforming with the design or pattern defined by the transfer adhesive layer on the shirt. In addition, since the
15 hot melt synthetic resin adhesive layer of the transfer adhesive layer contains resiliency imparting agent or resiliency assistant, the design or pattern can smoothly expand and contract in sympathy with the expansion and contraction of the shirt to thereby eliminate the disadvantages such as deformation and/or tearing of the fiber design or pattern.



The claims defining the invention are as follows:

1. A transferable flocked fiber sticker comprising a fiber flocked base assembly including a base sheet, a release adhesive layer applied to one surface of said base sheet and a number of fibers releasably flocked at one end in a closely adjacent and erect relationship to the adhesive applied surface of said base sheet by electrostatic blowing, and a transfer adhesive layer applied in a desired design or pattern to the end of said fibers opposite from the end of the fibers flocked to said base sheet and including a thermoplastic synthetic resin adhesive design layer applied to said fibers and a hot melt synthetic resin adhesive layer applied over said design layer heat dried so as to partially fuse the hot melt synthetic resin adhesive layer so as to cause it to partially fuse to the design layer.

2. The transferably flocked fiber sticker of claim 1, wherein said thermoplastic synthetic resin adhesive design layer contains powdery hot melt synthetic resin adhesive.

3. The transferably flocked fiber sticker of claim 1, wherein said thermoplastic synthetic resin adhesive layer is formed of a member selected from the group consisting of acrylic synthetic resin, vinyl acetate synthetic resin and vinyl chloride synthetic resin.

4. The transferably flocked fiber sticker of claim 3, in which said powdery hot melt synthetic resin adhesive contains resiliency imparting agent.

5. The transferably flocked fiber sticker of claim 3, in which said hot melt synthetic resin adhesive contains resiliency assistant.

6. The transferably flocked fiber sticker of claim 3, in which said powdery hot melt synthetic resin adhesive is a member selected from the group consisting of nylon synthetic resin and polyester synthetic resin.

7. The transferably flocked fiber sticker of claim 4, in which said resiliency imparting agent is a member selected from the group consisting of frother and latex resin.

8. The transferably flocked fiber sticker of claim 4, in which said resiliency assistant is a member selected from the group consisting of viscosity promoter, surfactant and defoamer.

9. A method for producing a transferably flocked fiber sticker comprising the steps of providing a base sheet, applying a release adhesive layer to one surface of said base sheet, said release adhesive being capable of releasably flocking fibers to said base sheet, releasably flocking a number of fibers at one end in a closely adjacent and erect relationship to

the adhesive applied surface of said base sheet by electrostatic blowing to thereby provide a fiber flocked base assembly, applying thermoplastic synthetic resin adhesive in a desired design or pattern to the end of said fibers opposite from the end of the fibers releasably flocked to said base sheet to provide a design layer, applying powdery hot melt synthetic resin adhesive in the form of a paste in water or other aqueous solution to said design layer, heat drying the resulting product to evaporate the moisture content in said paste form adhesive and at the same time partially fuse the hot melt synthetic resin adhesive so as to cause the hot melt synthetic resin adhesive to adhere said design layer to thereby provide a hot melt synthetic resin layer and cooling the resulting product to firmly unite said design layer and hot melt synthetic resin layer together to provide a transfer adhesive layer.

10. The method for producing a transferably flocked fiber sticker of claim 9, in which said thermoplastic synthetic resin adhesive is a member selected from the group consisting of acrylic synthetic resin, vinyl acetate synthetic resin and vinyl chloride synthetic resin.

11. The method for producing a transferably flocked fiber sticker of claim 9, in which said powdery hot melt synthetic adhesive in the paste form contains resiliency imparting agent.

12. The method for producing a transferably flocked fiber sticker of claim 9, in which said powdery hot melt synthetic resin adhesive in the paste form contains resiliency assistant.

13. The method for producing a transferably flocked fiber sticker of claim 11, in which said resiliency imparting agent is a member selected from the group consisting of frother and latex resin.

14. The method for producing a transferably flocked fiber sticker of claim 12, in which said resiliency assistant is a member selected from the group consisting of viscosity promoter, surfactant and defoamer.

DATED this TWENTY FIRST day of OCTOBER 1986
TOKYO HOULAISHA CO., LTD.

Patent Attorneys for the Applicant
SPRUSON & FERGUSON

64 249/86

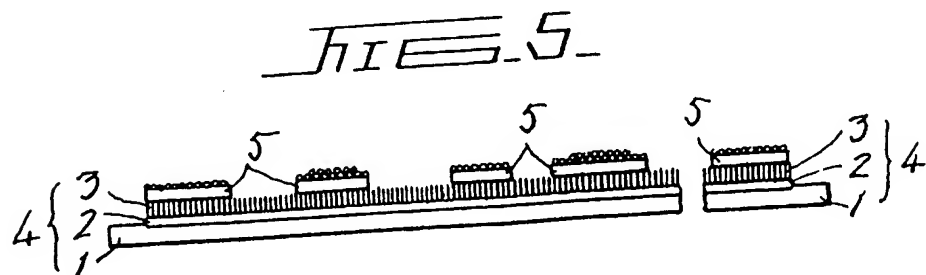
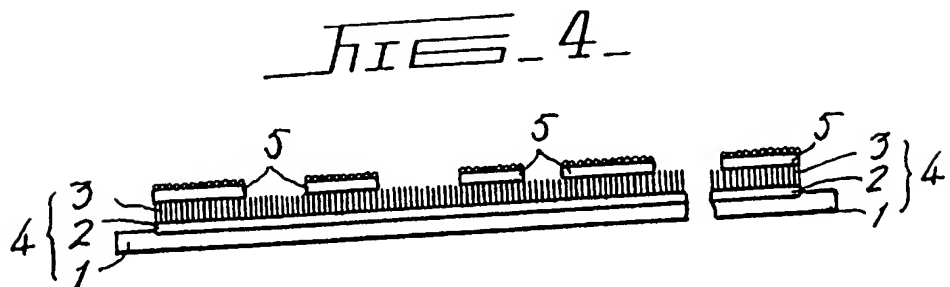
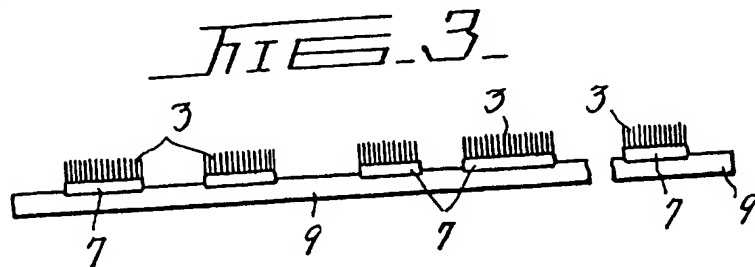
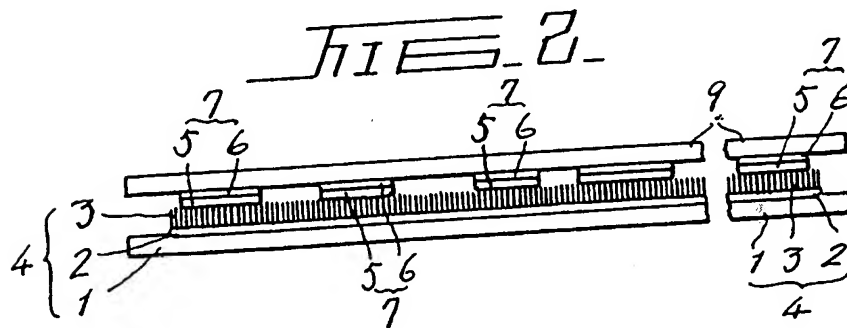
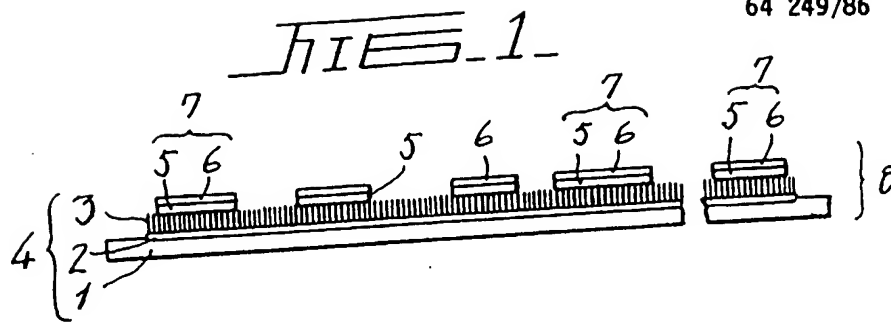


FIG. 6.

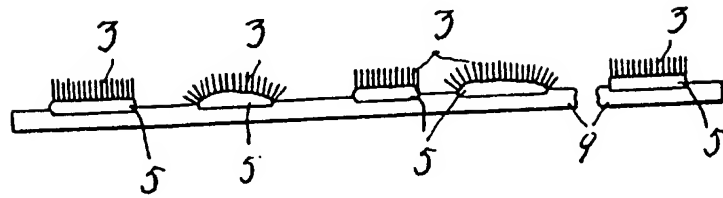


FIG. 7.

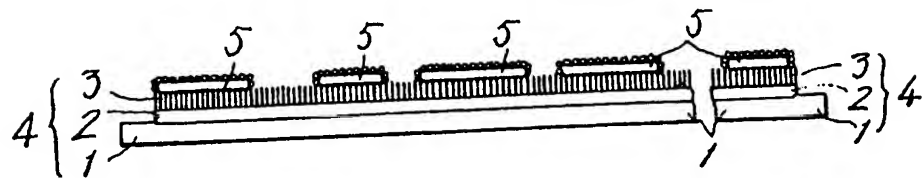


FIG. 8.

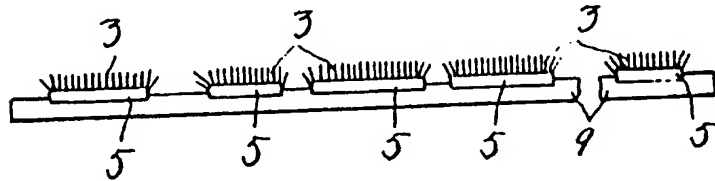


FIG. 9.

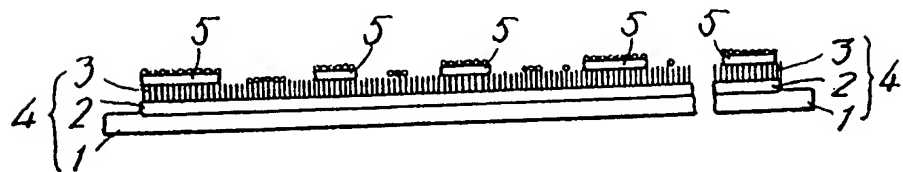
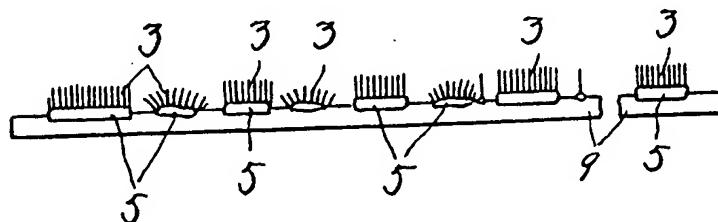


FIG. 10.



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKewed/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.